

Gas Laws Practice

Work the following problems on a separate sheet of paper.

- 1) The typical atmospheric pressure on top of Mt. Everest (29,028 feet) is about 265 torr. Covert this pressure to:
 - (a) atm
 - (b) mm Hg
 - (c) pascals
- 2) A balloon is filled with 35.0 L of helium in the morning when the temperature is 20.0°C. By noon the temperature has risen to 45.0°C. What is the new volume of the balloon?
- 3) CaCO_3 decomposes at 1200°C to form CO_2 gas and CaO . If 25 L of CO_2 are collected at 1200°C, what will the volume of this gas be after it cools to 250°C?
- 4) A helium balloon with an internal pressure of 1.00 atm and a volume of 4.50 L at 20.0°C is released. What volume will the balloon occupy at an altitude where the pressure is 0.600 atm and the temperature is -20.0°C?
- 5) 6.0 L of gas in a piston at a pressure of 1.0 atm are compressed until the volume is 3.5 L. What is the new pressure inside the piston?
- 6) An airtight container with a volume of 4.25×10^4 L, an internal pressure of 1.00 atm, and an internal temperature of 15.0°C is washed off the deck of a ship and sinks to a depth where the pressure is 175 atm and the temperature is 3.00°C. What will the volume of the gas inside be when the container breaks under the pressure at this depth?
- 7) If 5.0 moles of O_2 and 3.0 moles of N_2 are placed in a 30.0 L tank at a temperature of 25°C, what will the pressure of the resulting mixture of gases be?
- 8) Two flasks are connected with a stopcock. Flask #1 has a volume of 2.5 L and contains oxygen gas at a pressure of 0.70 atm. Flask #2 has a volume of 3.8 L and contains hydrogen gas at a pressure of 1.25 atm. When the stopcock between the two flasks is opened and the gases are allowed to mix, what will the resulting pressure of the gas mixture be?
- 9) A gas canister can tolerate internal pressures up to 210 atmospheres. If a 2.0 L canister holding 3.5 moles of gas is heated to 1350°C, will the canister explode?
- 10) A 35 L tank of oxygen is at 315 K with an internal pressure of 190 atmospheres. How many moles of gas does the tank contain?